6/12/91

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 5/31/91

SUBJECT: Review of Region V CLP Data
Received for Review on 5-22-91

FROM: Charles T. Elly, Director(5SCRL) Patrick J. Churilla for
Central Regional Laboratory

TO: Data User: Zit

6/10/91

We have reviewed the data for the following case(s).

SITE NAME: WaBash Paper Coating (EN) SMO Case No. 16245

EPA Data Set No. _____ No. of Samples 7 DU/Activity Numbers TFH, TFH02

CRL No. 91FE39519-25

SMO Traffic No. ENA49-51, EMW92-94, EKN21

CLP Laboratory: WADSWORTH Hrs. for Review 24+2=26 W. Wilson

Following are our findings:

( ) Data are acceptable for use.
(✓) Data are acceptable for use with qualifications.
( ) Data are preliminary - pending verification by laboratory.
( ) Data are unacceptable.

cc: Elenor McLean, Sample Mgmt.Office
Edward Kantor, EMSL-Las Vegas

The samples were collected on May 17, 1919. the laboratory received seven (7) soil samples on May 18, 1991 for full organic analysis in good condition.

Sample ENA49 was used as low level soil spike for VOA, SVOA and Pest/PCB.

Sample ENA50 was used as medium level soil spike for VOA and SVOA. No medium extraction was perform for Pest/PCB fraction.

All samples were extracted and analyzed within the holding time for SVOA and Pest/PCB.

The soil sample ENA50 and its matrix spike/spike duplicated were analyzed past the technical holding time for VOA.

The reviewer's narrative and data qualifiers are noted in the following pages.

Reviewed by: Steffanie N Tran ST
Phone: (312) 353-2960
Date: May 30, 1991

Below is a summery of the out-of-control audits and the possible effect on the data for this case.

1.HOLDING TIME

The laboratory received seven (7) soil samples on May 18, 1991 in good condition.

For VOA fraction, soil sample ENA50 and its matrix spike/spike duplicated were analyzed exceeded the technical holding time of seven (7) days; Therefore, the positive hits for this sample is estimated (J) and non-detected (UJ). The remain samples were analyzed within the holding time and their results are acceptable.

All SVOA and Pest/PCB soil samples were extracted very well within the Q.C. limit. The extracted were also analyzed within the forty (40) days holding time; Therefore, the results are acceptable.

2.GC/MS TUNING AND GC PERFORMANCE

GC/MS tuning complied with the mass list and ion abundance criteria for BFB and DFTPP.

DDT and Endrin degradation check using Evaluation mix B of the quantitation (DB-1701) and confirmation (DB-608) columns were acceptable (<20%).

Retention time for DDT met the required minimum retention time (>12 minutes) criteria for both primary and confirmation columns.

The retention time shift for DBC in sample ENA51 is outside the Q. C. criteria for the confirmation column (DB-608), 0.3% for capillary and 2.0% for packed column; Therefore, the positive hits for ENA51 should be qualified as estimated (J) and non-detect as unusable (R).

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3.CALIBRATION

Initial and continuing calibration of VOA and SVOA standards were evaluated for the Target Compounds List (TCLs) and outliers were recorded on the outlier forms included as a part of this narrative.

All five (5) pesticides reported RSD < 10% for the Pest/PCB initial calibration of the quantitation (DB-1701) and confirmation (DB-608) columns.

The %D on continuing calibration met the 15% criteria for the primary column. The continuing calibration for the confirmation column was not calculated properly. The reviewer calculated the calibration and %D manual. All of the compounds met the 20% criteria with the exception of Delta-BHC, Aldrin, Hept exposide, DDE and g-chlordane; Therefore, the results for these five compounds should be considered as estimated (J).

4.METHOD BLANK

For the VOA fraction, VBLK1 and VBLK2 are low level soil method blanks. VBLK1 contained three (3) common laboratory contaminants: Acetone, Methylene chloride and 2-Butanone. The presence of the above compounds in any of the associated samples is flagged as non-detect (U) when sample result is less than 10x the blank result. Please, refer to form IV VOA for the associated samples. VBLK2 contained low concentration of Methylene chloride but none of the associated samples contained Methylene chloride.

VBLK3 is medium level soil method blank for VOA. It appears to be free of contaminants.

For the SVOA fraction, SBLK1R1 and SBLK3R1 are medium level soil method blanks. SBLK1R1 contained four (4) TICs compounds but not in any of the associated samples. SBLK3R1 appears to be free of contaminants. SBLK1R2 is low level soil method blank and it appears to be free of contaminants.

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PBLK2 is Pest/PCB method blank, and it contained no pesticides residues.

5.SURROGATE RECOVERY

For VOA fraction, the Toluene-d8 was outside Q.C. limits for EMW92, EMW93 and ENA51. Bromofluorobenzene was out side the QC limits for EMW93. These samples were reanalyzed but Toluene-d8 was till out of the Q.C. limits. The protocol requires only one VOA surrogate to be out of control; Therefore, all positive hits for the above samples should be qualified as estimated (J) and non-detect (UJ).

For SVOA fraction, Terphenyl-d14 in samples EMW93 and EKN21 exceeded the QC limits; 2,4,6-Tribromophenol in EMW94 and ENA51 exceeded the QC limits. The protocol requires at least two (2) surrogates in a base/neutral or acid fraction to be out of control; Therefore,the above samples met the criteria and the results are acceptable.

The surrogate recoveries for Pest/PCB fraction were very well within the Q.C. limits.

6.MATRIX SPIKE/MATRIX SPIKE DUPLICATE

For VOA fraction, sample EMN49 was used as low level soil spike/spike duplicate, and ENA50 was used as medium level soil spike/spike duplicate. The recoveries and RPDs for the above spike/spike duplicate were within the Q.C. limits.

For SVOA fraction, soil samples ENA49 and ENA50 were used as low and medium level for matrix spike/spike duplicate respectively. The percent recoveries of 4-Nitrophenol, 2,4-Dinitrotoluene and pentachlorophenol were outside the Q.C. limits in sample ENA49. The percent recoveries of 4-Nitrophenol and 2,4-Dinitrotoluene were outside the Q.C. limits in sample ENA50. The presence of the above compounds in the unspike samples are qualified as estimated (J) and non-detect (UJ).

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The recoveries and %RPDs in the matrix spike/spike duplicate for Pest/PCB met Q.C. criteria.

7.FIELD BLANK AND FIELD DUPLICATE

No field blank nor field duplicate was included in this case.

8.INTERNAL STANDARDS

VOA internal standards BCM (IS1), BFB (IS2), and CBZ (IS3) in sample EMN92 were below the lower limits. The CBZ (IS3) in EMN92 RE was below the lower limit.

VOA internal standards BFB (IS2) and CBZ (IS3) in sample EMW93 were below the lower limits, CBZ (IS3) in sample EMW93 RE was below the lower limit.

The internal standards for ENA51 met the Q.C. limits and IS2 and IS3 were below the lower limits for ENA51 RE.

The data from samples EMW92 RE, EMW93 RE and ENA51 should be used in validating the results.

Any positive results using IS3 in samples EMW92 RE and EMW93 RE on April 23th is flagged as estimated (J) and non-detect (UJ).

For SVOA fraction, Perylene-d12 (IS6) and Phenanthrene-d10 (IS4) were below the lower limits in samples ENK21, ENK21 RE, EMW93 RE, EMW92, EMW92 RE, ENA50 MS and ENA50 MSD. IS4 was above the upper limit in sample ENA49 MS. ENK21, EMW92 and EMW93 RE should be used to validated the data for these samples since ENK21 RE, EMW92 RE and EMW93 RE had much lower value for IS6. The positive hits using IS6 should be qualified as estimated (J) and non-detect (UJ).

Please, refer to table 4 to locate the VOA compounds that are quantitated using IS1, IS2, IS3 and the SVOA compounds that are quantitated using IS6.

Reviewed by: Steffanie N Tran ST
Phone: (312) 353-2960
Date: May 28, 1991

9.COMPOUND IDENTIFICATION

The compound identification for all fractions appear to be satisfactory.

10.COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

VOA, SVOA and Pest/PCB Target Compounds (TCLs) and Tentative Identified Compounds (TICs) were properly reported; therefore, the data is acceptable.

11.SYSTEM PERFORMANCE

VOA and SVOA GC/MS baseline indicated acceptable performance. GC baseline indicated acceptable performance.

12.OVERALL CASE ASSESSMENT

Sample EMK21 contained 3 SVOA TCLs, 2 SVOA TICs.
Sample EMK21 RE contained 1 SVOA TCLs and 2 SVOA TICs.
Sample EMW92 contained 3 VOA TCLs, 6 VOA TICs, 13 SVOA TCLs, 18 SVOA TICs, and Aldrin.
Sample EMW92 contained 1 VOA TCLs, 12 SVOA TCLs and 21 SVOA TICs.
Sample EMK93 contained 2 VOA TCLs, 3 SVOA TICs,19 SVOA TICs and aroclor-1248.
sample EMW93 RE contained 2 SVOA TCLs and 15 SVOA TICs.
Sample EMW94 contained 2 SVOA TCLs and 17 SVOA TICs.
Sample ENA49 contained 1 VOA TCL, 3 SVOA TCLs and 16 SVOA TICs.
Sample ENA50 contained 2 VOA TCLs and 8 SVOA TICs.
Sample ENA51 contained 3 VOA TCLs, and ENA51 RE contained 2 SVOA TICs, 1 SVOA TCLs, Aroclor-1254.

For VOA fraction, the data from EMW92 RE , EMW93 RE and ENA51 should be used to validate the results since fewer internal standards for the above sample exceed the Q.C. limits.

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Phone: (312) 353-2960
Date: May 28, 1991

For SVOA fraction, ENK21, EMW92 and EMW93 RE should be used to validate the results because IS6 areas were closer to the lower limit.

For Pest/PCB, sample ENA51 contained aroclor-1254 with the concentrate of 1700 ug/kg. The sample should be rextracted at medium level according to the USEPA Contract Laboratory Program Statement Of Work 2/88 page D-14/Pest. The medium level extraction was not perform for this sample.

The retention time shift for ENA51 is outside the Q.C. limit; Therefore, the positive hits is qualified as estimated (J) and non-detect as unusable.

Reviewed by: Steffanie N Tran
Phone: (312) 353-2960
Date: May 28, 1991

CALIBRATION OUTLIERS
VOLATILE MSL COMPOUNDS

CASE/SAS # 16245 CONTRACTOR WADSWORTH

Instrument # FINN52	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME: 4/10/91 19:41	4/10/91 19:41			4/20/91 13:16			4/23/91 10:54								
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Chloromethane	0.81			1.00			1.08	34.3	J						
Bromomethane															
Vinyl Chloride															
Chloroethane															
Methylene Chloride															
Acetone															
Carbon Disulfide															
1,1-Dichloroethane															
1,1-Dichloroethene															
Trans-1,2-Dichloroethene															
Chloroform															
2-Butanone	0.11			0.052	26.9	J	0.115								
1,2-Dichloroethane															
1,1,1-Trichloroethane															
Carbon Tetrachloride															
Vinyl Acetate															
Bromodichloromethane															
1,2-Dichloropropane															
Trans-1,3-Dichloropropene															
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
cis-1,3-Dichloropropene															
2-Chloroethylvinylether															
Bromoform															
4-Methyl-2-Pentanone															
2-Hexanone	0.32			0.23	28.9	J	0.36								
Tetrachloroethene															
1,1,2,2-Tetrachloroethane															
Toluene															
Chlorobenzene															
Ethylbenzene															
Styrene															
m-Xylene															
o/p-Xylene															

AFFECTED SAMPLES:

EMW92	EN#49	
EMW93	ENA51	
	EMW92 RE	
	EMW93 RE	
	EMW94	
	EKN21	
	ENA49MS	
	ENA49MSD	
	ENA51 RE	

Reviewer's Initials/Date: ST 5/23/91

* These flags should be applied to the analytes on the sample data sheets.

CALIBRATION OUTLIERS
VOLATILE HSL COMPOUNDS

CASE/SAS # 16245 CONTRACTOR WADSWORTH

Instrument # 510000	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME: 4/26/91 23:30	4/26/91 23:30														
26 & 5/23/91	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Chloromethane															
Bromomethane															
Vinyl Chloride															
Chloroethane															
Methylene Chloride															
Acetone															
Carbon Disulfide															
1,1-Dichloroethene															
1,1-Dichloroethene															
Trans-1,2-Dichloroethene															
Chloroform															
2-Butanone															
1,2-Dichloroethane															
1,1,1-Trichloroethane															
Carbon Tetrachloride															
Vinyl Acetate															
Bromodichloromethane															
1,2-Dichloropropane															
Trans-1,3-Dichloropropene															
Trichloroethene															
Dibromochloromethane															
1,1,2-Trichloroethane															
Benzene															
cis-1,3-Dichloropropene															
2-Chloroethylvinylether															
Bromoform															
4-Methyl-2-Pentanone															
2-Hexanone															
Tetrachloroethene															
1,1,2,2-Tetrachloroethane															
Toluene															
Chlorobenzene															
Ethylbenzene															
Styrene															
m-Xylene															
o/p-Xylene															

ENA50
ENA50MS
ENA50MSD

AFFECTED SAMPLES:

Reviewer's Initials/Date: SF 5/23/91

* These flags should be applied to the analytes on the sample data sheets.

CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 16245 CONTRACTOR WADSWORTH

Instrument # EXTR03	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME: 5/2/91 7:16	5/2/91 7:16			5/2/91 10:53			5/2/91 7:47			5/7/91 8:04					
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
Phenol															
bis(-2-Chloroethyl)Ether															
2-Chlorophenol															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
Benzyl Alcohol															
1,2-Dichlorobenzene															
2-Methylphenol															
bis(2-chloroisopropyl)Ether															
4-Methylphenol															
N-Nitroso-Di-n-Propylamine	0.67			0.833			0.909	34.9	J	0.835					
Hexachloroethane															
Nitrobenzene															
Isophorone															
2-Nitrophenol															
2,4-Dimethylphenol															
Benzoic Acid	0.158			0.118			0.117			0.092	83.9	J			
bis(2-Chloroethoxy)Methane															
2,4-Dichlorophenol															
1,2,4-Trichlorobenzene															
Naphthalene															
4-Chloroaniline															
Hexachlorobutadiene															
4-Chloro-3-Methylphenol															
2-Methylnaphthalene															
Hexachlorocyclopentadiene															
2,4,6-Trichlorophenol															
2,4,5-Trichlorophenol															
2-Chloronaphthalene															
2-Nitroaniline															
Dimethyl Phthalate															
Acenaphthylene															
3-Nitroaniline															
Acenaphthene															
2,4-Dinitrophenol															
4-Nitrophenol															
Dibenzofuran															

AFFECTED SAMPLES:

EKN21
EMK93
EKN21RE
ENA50
ENA51
ENA49 (1/10)
ENA49MS
ENA49MSD
EMW92
EMW93RE
EMW94
ENA50MS
ENA50MSD
EMW92RE

Reviewer Initials/Date: S 5/23/91

* These flags should be applied to the analytes on the sample data sheets.

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CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
Page 2

CASE/SAS # 16245 CONTRACTOR WADSWORTH

Instrument # EXTR03	Init. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.			Cont. Cal.		
DATE/TIME: 5/2/91 7:16	5/2/91 7:16			5/2/91 0:53			5/3/91 7:47			5/7/91 8:04					
	RF	%RSD	*	RF	%D	*	RF	%D	*	RF	%D	*	RF	%D	*
2,4-Dinitrotoluene		-													
2,6-Dinitrotoluene															
Diethylphtnalate															
4-Chlorophenyl-phenylether															
Fluorene															
4-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
N-Nitrosodiphenylamine															
4-Bromophenyl-phenylether															
Hexachlorobenzene															
Pentachlorophenol															
Phenanthrene															
Anthracene															
Di-n-Butylphtnalate															
Fluoranthene															
Pyrene															
Butylbenzylphthalate															
Benzo(a)Anthracene															
bis(2-Ethylhexyl)Phthalate															
Chrysene															
Di-n-Octyl Phthalate															
Benzo(b)Fluoranthene															
Benzo(k)Fluoranthene															
Benzo(a)Pyrene															
Indeno(1,2,3-cd)Pyrene															
Dibenz(a,h)Anthracene															
Benzo(g,h,i) Perylene	0.70	38.6	J	0.76			0.82			0.96	37.1	J			

SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: ST 5/23/91

8/87

WESTON SM

DATA REPORTING QUALIFIERS - PAGE 1

For reporting results to EPA, the following result qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

VALUE - If the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL), report the value.

U - Indicates compound was analyzed for but not detected. The sample Quantitation Limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture. For example, if the sample had 24% moisture and a 1 to 10 dilution factor, the sample quantitation limit for phenol (330 U) would be corrected to:

$$\frac{(330\ U) \times df}{D} \qquad \text{where } D = \frac{100 - \%\ \text{moisture}}{100}$$

and df = dilution factor

$$\text{At 24\% moisture, } D = \frac{100 - 24}{100} = 0.76$$

$$\frac{(330\ U)}{.76} \times 10 = 4300\ U$$ rounded to the appropriate number of significant figures

For soil samples subjected to GPC clean-up procedures, the extract must be concentrated to 0.5 ml, and the sensitivity of the analysis is not compromised by the cleanup procedures. Therefore, the CRQL values will apply to all samples, regardless of cleanup. However if a sample extract cannot be concentratred to the protocol-specifed volume, this fact must be accounted for in reporting the sample quantitation limit.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/l, but a concentration of 3 ug/l is calculated, report it as 3J. The sample quantitation limit must be adjusted for dilution as dicussed for the U flag. The J flag is also applied to pesticide/Aroclor results where the pesticide/Aroclor is confirmed to be present but the concentration is less than the CRQL.

N - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

DATA REPORTING QUALIFIERS - PAGE 2

P - This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but unsuccessful, do not apply this flag, instead use a laboratory-defined flag, discussed below.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified TCL compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample and all concentration values reported on that Form I are flagged with the "D" flag. This flag alerts data users that any discrepancies between the concentrations reported may be due to dilution of the sample or extract.

A - This flag indicates that a TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the Sample Data Summary Package and the SDG Narrative. If more than one flag is required, use "Y" and "Z", as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample. The laboratory-defined flags are limited to the letters "X", "Y", and "Z".

* TABLE 4

VOLATILE INTERNAL STANDARDS WITH CORRESPONING TCL ANALYTES ASSIGNED FOR QUANTITATION

Bromochloromethane	1,4-Difluorobenzene	Chlorobenzene-d_5
Chloromethane	2- Butanone	2-Hexanone
Bromomethane	1,1,1-Trichloroethane	4-Methyl-2-Pentanone
*Vinyl Chloride	Carbon Tetrachloride	Tetrachloroethene
Chloroethane	Vinyl Acetate	1,1,2,2-Tetrachloroethane
Methylene Chloride	Bromodichloromethane	*Toluene
Acetone	*1,2-Dichloropropane	Chlorobenzene
Carbon Disulfide	trans-1,3-Dichloropropane	*Ethylbenzene
*1,1-Dichloroethene	Trichloroethene	Styrene
1,1-Dichloroethane	Dibromochloromethane	Xylene (total)
1,2-Dichloroethene (total)	1,1,2-Trichloroethane	Bromofluorobenzene (surr)
*Chloroform	Benzene	
1,2-Dichloroethane	cis-1,3-Dichloropropene	Toluene-d_8 (surr)
1,2-Dichloroethane-d_4 (surr)	Bromoform	

(surr) = surrogate compound
*Calibration check compounds

EMIVOLATILE INTERNAL STANDARDS WITH CORRESPONDING TCL ANALYTES ASSIGNED FOR QUANTITATION

4-Dichlorobenzene-d_4	Naphthalene-d_8	Acenaphthene-d_{10}	Phenanthrene-d_{10}	Chrysene-d_{12}	Perylene-d_{12}
enol	Nitrobenzene	Hexachlorocyclo-pentadiene	4,6-Dinitro-2-methylphenol	Pyrene	Di-n-octyl Phthalate
s(2-Chloroethyl) ether	Isophorone	2,4,6-Trichloro-phenol	N-nitrosodi-phenylamine	Butylbenzyl Phthalate	Benzo(b)fluor-anthene
Chlorophenol	2-Nitrophenol	2,4,5-Trichloro-phenol	1,2-Diphenylhy-drazine	3,3'-Dichloro-benzidine	Benzo(k)fluor-anthene
3-Dichlorobenzene	2,4-Dimethyl-phenol	2-Chloronaphthalene	4-Bromophenyl Phenyl Ether	Benzo(a)-anthracene	Benzo(a)pyrene
4-Dichlorobenzene	Benzoic acid	2-Nitroaniline	Hexachloro-benzene	bis(2-ethylhexyl Phthalate	Indeno(1,2,3-cd) pyrene
nzyl Alcohol	bis(2-Chloro-ethoxy)methane	Dimethyl Phthalate	Pentachloro-phenol	Chrysene	Dibenz(a,h) anthracene
2-Dichlorobenzene	2,4-Dichloro-phenol	Acenaphthylene	Phenanthrene	Terphenyl-d_{14} (surr)	Benzo(g,h,i) perylene
ethylphenol	1,2,4-Trichloro-benzene	3-Nitroaniline	Anthracene		
s(2-Chloroiso-propyl)ether	Naphthalene	Acenaphthene	Di-n-butyl Phthalate		
ethylphenol	4-Chloroaniline	2,4-Dinitrophenol	Fluoranthene		
itroso-Di-n-propylamine	Hexachloro-butadiene	4-Nitrophenol			
achloroethane	4-Chloro-3-methylphenol	Dibenzofuran			
luorophenol	2-Methylnaphth-alene	2,4-Dinitrotoluene			
urr)	Nitrobenzene-d_5 (surr)	2,6-Dinitrotoluene			
nol-d_6 (surr)		Diethyl Phthalate			
		4-Chlorophenyl-phenyl ether			
		Fluorene			
		4-Nitroaniline			
		2-Fluorobiphenyl (surr)			
		2,4,6-Tribromo Phenol (surr)			

r = surrogate compound